

### 导航信号有害波形检测技术研究

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## Research of Detection Technique of Navigation Signal' s Evil Waveform

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摘要

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**摘要** 基于多相关器的导航卫星发射信号有害波形检测是全球导航卫星系统完好性检测的重要内容。该文定义并分析了有害波形二阶模型对接收机码环的影响,研究了基于LAAS/WAAS的多相关器检测系统,从简化完好性通道,缩短检测时间的角度出发,提出了星上自主导航有害波形检测方案,仿真分析了检测能力与检测效率,在星上接收信号的信噪比比地基高20 dB时,相关峰检测标准差减小了0.3个码片以上。结果表明,该文技术可有效提高导航卫星系统的完好性。

**关键词:** 卫星导航 完好性 有害波形 星上自主完好性检测 多相关器

**Abstract:** The detection of navigation signal' s evil waveform based on multicorrelator is an important issue of GNSS integrity monitoring. This paper defines the effect of 2nd-order step threat model of evil waveform on the code tracking loop, analyzes the multicorrelator technique of detection system based on Local/Wide Area Augmentation System (LAAS/WAAS). From the perspective of simplifying ground integrity channel and shortening the time consumption, this paper puts forward a new technique based on satellite autonomous integrity monitoring. The simulation of the detection capability and efficiency result in a 0.3 Tc decrease of the detection deviation of the technique based on SAIM with a 20 dB increasing of SNR over the technique based on LAAS, which makes a great significance of integrity monitoring.

**Keywords:** Satellite navigation Integrity Evil waveform Satellite Autonomous Integrity Monitoring (SAIM)

Multicorrelator

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